

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
03 July 2025 (03.07.2025)



(10) International Publication Number
WO 2025/144888 A1

(51) International Patent Classification:

C25B 11/032 (2021.01) C25B 11/052 (2021.01)
C25B 11/031 (2021.01) C25B 11/073 (2021.01)
C25B 11/051 (2021.01)

SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN,
GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Published:

- with international search report (Art. 21(3))
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

(21) International Application Number:

PCT/US2024/061903

(22) International Filing Date:

26 December 2024 (26.12.2024)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

63/615,032 27 December 2023 (27.12.2023) US
63/737,135 20 December 2024 (20.12.2024) US

(71) Applicant: **TURNOVER TECHNOLOGIES, INC.**

[US/US]; c/o Turnover Labs, 370 Jay Street, Floor 7, Brook-
lyn, New York 11201 (US).

(72) Inventors: **BEATTY, Marissa**; c/o Turnover Labs, 370 Jay

Street, Floor 7, Brooklyn, New York 11201 (US). **BAX-
TER, Amanda F.**; c/o Turnover Labs, 370 Jay Street, Floor
7, Brooklyn, New York 11201 (US).

(74) Agent: **MARSH, David R.** et al.; Arnold & Porter Kaye Sc-

holer LLP, 601 Massachusetts Ave., NW, Washington, Dis-
trict of Columbia 20001-3743 (US).

(81) Designated States (unless otherwise indicated, for every

kind of national protection available): AE, AG, AL, AM,
AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ,
CA, CH, CL, CN, CO, CR, CU, CV, CZ, DE, DJ, DK, DM,
DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT,
HN, HR, HU, ID, IL, IN, IQ, IR, IS, IT, JM, JO, JP, KE, KG,
KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY,
MA, MD, MG, MK, MN, MU, MW, MX, MY, MZ, NA,
NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO,
RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH,
TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS,
ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every

kind of regional protection available): ARIPO (BW, CV,
GH, GM, KE, LR, LS, MW, MZ, NA, RW, SC, SD, SL, ST,
SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ,
RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ,
DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT,
LU, LV, MC, ME, MK, MT, NL, NO, PL, PT, RO, RS, SE,

(54) Title: MEMBRANE-EMBEDDED GAS DIFFUSION ELECTRODE FOR REACTANT VALORIZATION

(57) Abstract: The present disclosure discloses and includes a membrane-embedded gas diffusion electrode (ME-GDE) apparatus for the electrochemical valorization of one or more reactant species, comprising an electronically conductive support material, a catalytic phase, a membrane phase, and an ion-conducting phase, wherein the catalytic phase is embedded in the ion-conducting phase, and wherein the ion-conducting phase is in contact with the electronically conductive support material.

WO 2025/144888 A1